## CLAIMS

1) Film folding and supplying apparatus for the machines for the packaging of products with stretchable film, of the type comprising guiding means placed between the feeding bobbin of the film and the wrapping station, in order to subject the portion of film cyclically inserted in said station, to a possible operation of folding with the folds oriented in the travelling direction of the film, to modify the width of the same film with respect to the dimensions of the product to be wrapped, in such a manner that the last edges of the film on the bottom of the product, during the normal working cycle of the packaging machine, do not laterally project from the bottom of the same product, characterised by the fact that said guiding means which provide to the pleating of the wrapping film, are pre-arranged to co-operate essentially with rolling friction with the same wrapping film.

2) Apparatus according to claim 1), characterised by the fact that the means for the folding of the wrapping film, are such to give to the same film a substantially omega transversal section.

3) Apparatus according to claim 1), characterised by the fact that the means for the pleating of the wrapping film, are pre-arranged adjustable for the adjustment to films of at least two different widths and to pleat the film with a width proportionate to the one of the two different ranges of medium-small and large products which can be packaged by a same machine.

4) Apparatus according to claim 3), characterised by the fact that the means for the adjusting of the pleating means of the wrapping film, are such to pleat the film with a width which is proportionate to the one of the products of smaller width of the two different ranges of medium-small and large packageable by a same machine.

5) Apparatus according to claim 1), characterised by the fact that the pleating means of the wrapping film comprise an elongate, flat and fixed guide (8), which with its longitudinal edges carries projecting rows of flat, idle and rounded edges wheels (9, 9'), which substitute to said edges of the guide to co-operate with the film with rolling friction, there being provided that the edges of the film laterally projecting from

said central guide (8) can be partially folded below said row of wheels, by means of the internal and opportunely bent edges, with progressive reciprocal approach in the travelling direction of the film, of respective lateral guides (13, 13') which upon said internal edges carry suitably projecting, respective rows of flat, idle and rounded edges wheels (15, 15'), to co-operate with rolling friction with the wrapping film.

6) Apparatus according to claim 5), characterised by the fact that the longitudinal edges of the central guide (8) are slightly upwardly bent, in such a manner that the rows of wheels (9, 9') rotatably placed on the edges are forming, in the whole, an upwardly concave sliding surface, so that the medial portion of the film in the folding phase does not touch the upper face of said wheels.

7) Apparatus according to claim 5), characterised by the fact that the longitudinal and internal edges of the lateral guides (13, 13'), are slightly downwardly bent, so that the rows of wheels (15, 15') rotatably assembled upon said edges form in the whole a downwardly convex sliding surface, so that the edges of the folded film do no touch the lower face of said wheels.

8) Apparatus according to claim 5) characterised by the fact that the central guide (8) is provided in the terminal and posterior portion of its lateral edges, with rounded-edges plates (10, 10') made with suitable low-friction coefficient material, which with the external side are in substantial tangency condition with the peripheral and active portion of the last folding wheels (9. 9') carried by the same lateral edges of said guide in such a manner that said plates concur to fold and guide in correct manner the film during the folding phase.

9) Apparatus according to claim 5), characterised by the fact that the central guide (8) with the rows of lateral wheels (9, 9') is fixed with its center line upon projections (6) carried by the longitudinal member (103) of an underlying ribbed and a cross plan support (3), said longitudinal member (103) being fixed with one end, and in projecting manner, to the traverse (1) which supports the distributor of the film and being downwardly inclined with the other end which is projecting for a correct portion from the anterior end of said central guide (8), under which there is fixed on

the central line a support (11) which is rotatably supporting in front of said guide and transversally to this, a double roller (12) having the same width of the sliding track made by the wheels (9, 9') of said guide and upon which the film slides before reaching on said wheels.

10) Apparatus according to claim 9), characterised by the fact that the anterior end of said longitudinal member (103) of the support which is supporting the central guide (8) of the folding means of the film, ends with a fork conformation (303) to support rotatably free, a central roller (5) and consecutively to this a couple of lateral and equal rollers (105, 105') angularly spaced from the central roller of about 8-10° degrees, in such a manner to realise a convex transmission upon which is transmitted the film (F) before reaching the folding means, to maintain the same film opportunely stretched in transversal direction.

11) Apparatus according to the preceding claims, characterised by the fact that the lateral guides (13, 13') with the relative rows of wheels (15, 15') for the folding of the film, are reinforced by suitably ribs (14, 14') and carries intermediate appendices (113, 113') for the outside widening, provided with slots (18, 18') transversal to the path of the film and crossed by screws (17, 17') for the fixing of said guides on the flat ends of the arms (403, 403') of said cross-support (3), in such a manner that it is possible to adjust the distance between the lateral guides (13, 13') with a variation which is equal to the length of said slots.

12) Apparatus according to claim 11), characterised by the fact that the flat ends of the arms (403, 403') of the cross support (3), which is supporting the guides (8, 13, 13') for the folding of the film, are provided with couples of threaded holes (16, 16') having a different distance from the longitudinal member (103) of the said cross-shaped support (3) and in said holes may be screwed the fixing screws (17, 17') for the lateral guides (13, 13'), in such a manner that said guides may be adjusted in the reciprocal distance, in addition to the pitch resulting from the length of said slots (18, 18'), also with the pitch given by the distance between the said couples of threaded holes (16, 16').

13) Apparatus according to the preceding claims, characterised by the fact that the end (203) of the longitudinal member (103) of the cross-support (3), which is fixed to the traverse (1) for the support of the film distributor, is enlarged and rotatably supports the intermediate portion of a shaft (104) which is horizontal and transversal to the path of the film, upon which there are fixed rubber rollers (4, 4') with the same features, upon which there are sliding the lateral edges of the film which is coming out from the folding means, the same film being pushed against said rollers by means of an overhanging parallel roller (19) which because of the utilisation of freewheels, is freely rotatable only in the running direction of the film and not in the opposite direction.

14) Apparatus according to the preceding claims, characterised by the fact that the traverse (1) which supports in projecting manner the cross support (3) with the folding means of the film, has rounded edges and it is at a such level that upon same may run the folded film, said traverse being provided on the posterior front for the exit of the film and on the upper wall, with a recess (26) in which there is fixed a jaw (28) with the upper portion (128) comb-shaped, with the teeth opened and oriented accordingly to the running direction of the folded film and upstream of said jaw and parallel to this, said traverse being provided with a recess having a length which is the same of said jaw, which houses in a condition of non-projection a rubber insert with longitudinal grooves (29) and being provided that the same traverse (1) is provided at the level of the ends of said jaw, with recesses housing electromagnets (3, 31') useful for the closure of the film distributor of the film inferiorly formed by the above mentioned portions.

15) Apparatus according to claim 14), characterised by the fact that superiorly to the lower comb (128) for the distributor of the film, there is provided a complementary comb (132) obtained in the lower portion of a traverse (32) with an L lateral shape and suitably ribbed at least at the ends which are fulcrumed on an axle (33, 33') which is parallel to the longitudinal axis of said comb and which ideally passes for (by) for the point of the teeth of the same comb, the said traverse being

provided at the ends with appendices (232, 232') which transversally extend same in the running direction of the film and beyond the point of the teeth of its comb, upon which appendices there operate elastic means (35, 35') which push said appendices against lower and adjustable retainers (36, 36'), the whole in such a manner to maintain the upper comb of the distributor opportunely raised from the lower comb and to maintain a strip of rubber (37) upwardly fixed on the lower face of the same upper comb (132) and preferably provided with suitable longitudinal grooves, opportunely raised and distant from the opposed rubber insert (29) of the lower jaw of the same distributor, there being provided that outside of the upper comb (132) the jaw (32) which is defining this component, is inferiorly provided with ferromagnetic disks (38, 38'), opposed to the lower electromagnets (31, 31') which, when are energized, attract said disks and the upper comb, in order to stop the film between the strips of rubber (37, 29) of the two combs of the distributor.

16) Apparatus according to claim 15) characterised by the fact that the energization means of the electromagnets (31, 31') of the distributor of the film may be such to supply a variable energization according to a pre-established program which provides a loosening of the clamping of the film in some working phases of the packaging machine.